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TITLE: LOW PRESSURE SYNTHESIS DEVICE FOR  
DIAMOND  
PUBN-DATE: July 1, 1985

INVENTOR-INFORMATION:  
NAME  
NISHIYAMA, AKIO  
KIKUCHI, NORIBUMI  
SHINGYOUCHI, TAKAYUKI  
YAMASHITA, HIROAKI

ASSIGNEE-INFORMATION:  
NAME COUNTRY  
MITSUBISHI METAL CORP N/A

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APPL-DATE: December 7, 1983

INT-CL (IPC): C30B029/04, C30B025/08

US-CL-CURRENT: 118/733, 423/446 , 501/86

ABSTRACT:

PURPOSE: To form efficiently a uniform diamond coating on the surface of tools and parts by disposing thermion radiating filaments, base body support and gas flow regulating wall in common use as a heater for heating a base body into a synthesizing vessel concentrically with a gas introducing pipe provided at the center of said vessel.

CONSTITUTION: An outside wall 1 of a synthesizing vessel

1 disposed  
concentrically with a gas introducing pipe 3 provided at  
the center of the  
synthesizing vessel and a gas flow regulating wall 5  
attached with base body  
heaters are removed and a base body for wear resistant  
tools, cutting tools,  
wear resistant parts, etc. is attached to a base body  
support 4 and thereafter  
the wall 1 and the wall 5 are installed. The inside of the  
vessel is then  
evacuated by a vacuum pump 9 and after electricity is  
conducted from a power  
source 7 to the base body heaters to heat the base bodies  
to  
 $300 \sim 1,100^{\circ}\text{C}$ , a gaseous mixture consisting  
essentially of  
 $\text{H}_2$ - $\text{CH}_4$  is introduced through an introducing pipe  
2 into the vessel.  
Electric current is conducted at the same time to thermion  
radiating filaments  
3 to heat same to about  $1,300^{\circ}\text{C}$  surface temp. The  
pressure is regulated to  
 $0.1 \sim 100$  Torr by opening a valve 8 and a diamond film is  
formed on the base  
body surface.

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723 HC

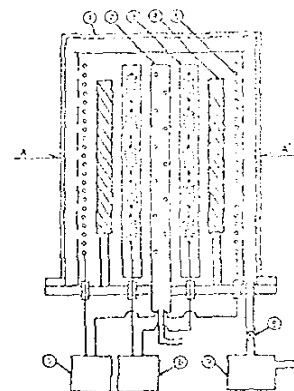
85-124466-32 E66102 JMTV 07.12.83  
MITSUBISHI METAL KK  
07.12.83, 07.12.83 (01.07.83) C65-25 '08 C65-25 '08

Diamond synthesis apparatus using lower pressures - where electron-emitting filament, substrate holder and gas rectifier with heater are arranged round gas raw material feed pipe

C65-084000

A substrate is heated at 2000-1800 deg. C. A mixed gas of H<sub>2</sub> with CNH<sub>3</sub> etc. at a pressure of 0.1-100 Torr is activated and fed into a synthesis tank.

Novelty is that a gas feed vertical pipe is put in the axial centre of the tank. A filament capable of emitting thermal electrons, substrate holder and gas rectifier with a substrate heater are concentrically put around the gas feed pipe in the tank, so that the mixed gas is fed into the tank through the gas feed pipe and an exhaust gas passing through the gas rectifier is discharged from a space between the rectifier wall and tank. (App Dwg. No. 1/2)



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⑪ 特許出願公開

## 昭60-122795

審査請求 未請求 発明の数 1 (全 3 頁)

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As the number of nodes in the network increases, the number of nodes that are not in the network increases. This is because the number of nodes that are not in the network is proportional to the number of nodes that are in the network. As the number of nodes in the network increases, the number of nodes that are not in the network increases. This is because the number of nodes that are not in the network is proportional to the number of nodes that are in the network.

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以上三項，在「新學期」中，應予積極的檢討與改進，以期「新學期」的教學，能更趨於完善。

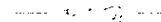
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PLATE 10 (10)

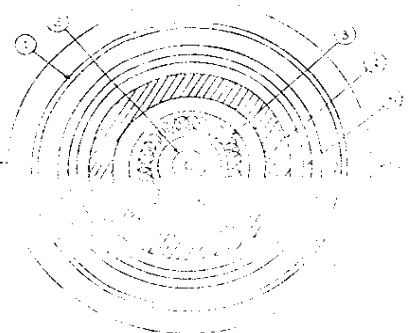


Fig. 10

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